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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/291,006	04/14/1999	HIROKI HIYAMA	862.2789	1546

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EXAMINER	
HANNETT, JAMES M	

ART UNIT	PAPER NUMBER
2612	

DATE MAILED: 06/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/291,006	HIYAMA ET AL.	
	Examiner	Art Unit	
	James M Hannett	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) *1-13* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 April 1999* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *3 and 5* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

Applicant's election of Claims 1-14 in Paper No. 7 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1: Claims 14, 15, 19, 20, 23, 24 rejected under 35 U.S.C. 102(e) as being anticipated by USPN 5,933,189 Nomura.

2: As for Claim 14, Nomura teaches in Figure 16 and on Column 38, Lines 1-17 a solid state image sensing apparatus comprising: a plurality of pixels each including a photoelectric conversion element (PD), a field effect transistor (QA) whose gate receives photo-charge generated by the photoelectric conversion element, a first switch (QT) for controlling connection between the photoelectric conversion element and the gate of the field effect transistor, and a first reset means (QP) for resetting the gate of the field effect transistor; Output lines (202a) for transferring an output from the field effect transistors; Column 38, Lines 18-27; Load means (212a), provided on the output lines, for the field effect transistors, Column 39, Lines 18-25; and second reset means (TR) for resetting the output lines to a predetermined voltage.

3: In regards to Claim 15, Nomura teaches that the predetermined voltage is ground voltage; Column 39, Lines 18-25.

4: In regards to Claim 19, Nomura further teaches in Figure 7 the use of comprising a fourth switch (QB), arranged between the field effect transistor (QA) and the output line, for selecting a row; Column 21, Lines 1-20 Nomura teaches that the signal will be output to the output line through the switch (QB) when The switch is turned on by a voltage VB. Therefore, because the signal in the given row will only be output when the transistor (QB) is on it performs a function of selecting the row.

5: As for Claim 20, Nomura teaches in Figure 16 and on Column 38, Lines 1-17 a method of operating a solid-state image sensing apparatus having pixels each including a photoelectric conversion element (PD), a field effect transistor (QA) whose gate receives photo-charge generated by the photoelectric conversion element, a first switch (QT) for controlling connection between the photoelectric conversion element and the gate of the field effect transistor, and a first reset means (QP) for resetting the gate of the field effect transistor, and output lines (202) for transferring an output from the field effect transistor, Column 38, Lines 18-27; load means (212), provided on the output lines, for the field effect transistors, Column 39, Lines 18-67; and second reset means (TR) for resetting the output lines to a predetermined voltage, wherein the output lines are reset by the second reset means (TR) in advance of connecting of the photoelectric conversion element and the gate of the field effect transistor.

6: In regards to Claim 23, Nomura further teaches in Figure 7 the use of comprising a fourth switch (QB), arranged between the field effect transistor (QA) and the output line, for selecting a row; Column 21, Lines 1-20 Nomura teaches that the signal will be output to the output line

through the switch (QB) when The switch is turned on by a voltage VB. Therefore, because the signal in the given row will only be output when the transistor (QB) is on it performs a function of selecting the row.

7: As for Claim 24, Nomura teaches that the photoelectric conversion element is a photodiode (PD), Column 40, Lines 1-32. Furthermore, the photodiode is depleted after the transference of the photo-charge from the photoelectric conversion element to the gate of the field effect transistor, Column 14, Lines 44-63.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8: Claims 16, 17, and 21 rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,933,189 Nomura in view of USPN 6,538,693 Kozuka.

9: As for Claim 16, Nomura teaches the claimed invention as discussed above in Claim 14. However, Nomura does not teach the method of outputting the signal from the pixels through switches to storage capacitors.

Kozuka teaches in Figure 1A and on Column 4, Lines 65-67; and Column 5, Lines 1-30 that it is advantageous to output the signals from pixels in an image sensor array to a noise signal removing unit in order to improve the image quality. Furthermore, this circuit includes a first capacitor (9) for temporarily storing an output from the field effect transistor transferred to the

output line; and a second switch (7) for controlling transference of the output from the output line to the first capacitor (9).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the noise signal removing circuit as taught by Kozuka in the solid state image pickup device of Nomura in order to improve the image quality and remove the noise from the image data.

10: In regards to Claim 17, Nomura teaches the claimed invention as discussed above in Claim 14. However, Nomura does not teach the method of outputting the signal from the pixels through switches to storage capacitors.

Kozuka teaches in Figure 1A and on Column 4, Lines 65-67; and Column 5, Lines 1-30 that it is advantageous to output the signals from pixels in an image sensor array to a noise signal removing unit in order to improve the image quality. Furthermore, this circuit includes a first capacitor (9) for temporarily storing an output from the field effect transistor reset by the first reset means; a second switch (7) for controlling transference to the first capacitor (9); a second capacitor (10) for temporarily storing an output from the field effect transistor after the photoelectric conversion element and the field effect transistor are connected via the first switch; and a third switch (8) for controlling transference to the second capacitor (10).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the noise signal removing circuit as taught by Kozuka in the solid state image pickup device of Nomura in order to improve the image quality and remove the noise from the image data.

11: In regards to Claim 21, Nomura teaches the claimed invention as discussed above in Claim 20. However, Nomura does not teach the method of outputting the signal from the pixels through switches to storage capacitors.

Kozuka teaches in Figure 1A and on Column 4, Lines 65-67; and Column 5, Lines 1-30 that it is advantageous to output the signals from pixels in an image sensor array to a noise signal removing unit in order to improve the image quality. Furthermore, this circuit includes a first capacitor (9) and a second capacitor (10) connected to each of the output lines, a second switch (7) for controlling connection between the output line and the first capacitor (9), and a third switch (8) for controlling connection between the output line and the second capacitor (10), further comprising the steps of: Transferring a first voltage, outputted from the field effect transistor reset by the first reset means, to the first capacitor (9) via the second switch (7); and transferring a second voltage, outputted from the field effect transistor after the photoelectric conversion element and the gate of the field effect transistor are connected via the first switch, to the second capacitor (10) via the third switch (8).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include the noise signal removing circuit as taught by Kozuka in the solid state image pickup device of Nomura in order to improve the image quality and remove the noise from the image data.

12: Claims 18, and 22 rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,933,189 Nomura in view of USPN 6,037,577 Tanaka et al.

13: As for Claim 18, Nomura teaches the claimed invention as discussed in Claim 14. However, Nomura does not teach the use of a fourth switch arranged between the field effect transistor and a power supply, for selecting a row.

Tanaka et al teaches in Figure 7 and on Column 9, Lines 3-24 a solid state image pickup device that has a fourth switch (3_{11}), arranged between the field effect transistor (2_{11}) and a power supply, which enables the image sensor to select a row to output the signals from pixels in a given row for selecting a row.

Therefore, it would have been obvious to on of ordinary skill in the art at the time the invention was made row selecting switch arranged between the field effect transistor (2_{11}) and a power supply as taught by Tanaka et al in the image sensor or Nomura in order to select a row to output the signals from pixels in a given row for selecting a row.

14: As for Claim 22, Nomura teaches the claimed invention as discussed in Claim 20. However, Nomura does not teach the use of a fourth switch arranged between the field effect transistor and a power supply, for selecting a row.

Tanaka et al teaches in Figure 7 and on Column 9, Lines 3-24 a solid state image pickup device that has a fourth switch (3_{11}), arranged between the field effect transistor (2_{11}) and a power supply, which enables the image sensor to select a row to output the signals from pixels in a given row for selecting a row.

Therefore, it would have been obvious to on of ordinary skill in the art at the time the invention was made row selecting switch arranged between the field effect transistor (2_{11}) and a power supply as taught by Tanaka et al in the image sensor or Nomura in order to select a row to output the signals from pixels in a given row for selecting a row.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. USPN 5,793,423 Hamasaki.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M Hannett whose telephone number is 703-305-7880. The examiner can normally be reached on 8:00 am to 5:00 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on 703-305-4929. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-842-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to customer service whose telephone number is 703-308-6789.

James Hannett
Examiner
Art Unit 2612

JMH
June 3, 2003

WENDY R. GARBER
SUPERVISORY PATENT EXAMINER
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